

CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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COUNTRY

East Germany

REPORT NO.

25X1

SUBJECT

Nitric Acid Production at the
Leuna Plant, Leuna

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REFERENCES

THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.
THE APPRAISAL OF CONTENT IS TENTATIVE.
(FOR KEY SEE REVERSE)

1. Nitric acid was produced at Leuna by the oxidation of ammonia with air in a double cone-shaped reactor under 5 atm pressure. The mixed ammonia and air was passed through a platinum screen placed at the widest point of the reactor and between the two conical halves of the reactor. The screen had platinum wires about 0.1 mm. in diameter and spaces about 0.1 mm. between these. This screen was electrically heated to a glowing temperature of about 600 - 700° C and the mixed gases were passed upward through it. This catalyzed the oxidation process and, as the heat of burning was sufficient to continue the reaction, the platinum gauze could be allowed to cool, once the reaction had started. The platinum catalyst is not very expensive as it is of light weight and is very durable.
2. The Soviets wished to change the process to operate atmospheric pressures so that they could use iron catalyst. This would mean that the reactor would have to be about five times larger to give the same production as in the process operating at 5 atm. Based on the economy of the platinum catalyst and on the smaller reactors required, I prefer the pressure process to the atmospheric process.
3. In this method of producing nitrogen by burning ammonia, some lower oxides of nitrogen NO₂ and N₂O₄ are produced along with the desired nitric acid anhydride N₂O₅. These lower oxides can be oxidized catalytically to the N₂O₅ or can be absorbed in concentrated nitric acid and oxidized in that manner. Concentrated nitric acid 93-95 is fairly stable and is suitable

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for use as rocket fuel. The ferric nitrate formed when the acid is in contact with steels helps stabilize it. However, this must be kept at a minimum, if the acid is to be used with rocket fuels as the ignition time is lowered by the ferric nitrate.

4. Normal or dilute concentrated nitric acid was required at Leuna for the production of calcium nitrate and ammonium nitrate fertilizers. In my opinion, ammonium nitrate production is not a desirable production due to the danger of explosions.
5. The urea production, which was small, was also dangerous due to explosions during the evaporation of the water to give the dry urea. There was one explosion at Leuna of urea, about 2 cu m, at about the point where no water remained.

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